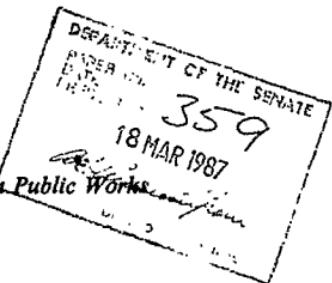




Parliamentary Standing Committee on Public Works



REPORT

relating to the

DEVELOPMENT OF NEW UTILITY HELICOPTER FACILITIES AT RAAF BASE, TOWNSVILLE

(Second Report of 1987)



THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA
1987

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

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NEW UTILITY HELICOPTER
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RAAF BASE, TOWNSVILLE

(Second Report of 1987)

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(Twenty-Eighth Committee)

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John Saunderson, M.P. (2)

(1) Resigned 13 February 1986

(2) Appointed 18 February 1986

EXTRACT FROM THE
VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES
NO. 133 DATED THURSDAY, 23 OCTOBER 1986

16 PUBLIC WORKS COMMITTEE - REFERENCE OF WORK - UTILITY HELICOPTER FACILITIES, RAAF BASE, TOWNSVILLE - DEVELOPMENT: Mr West (Minister for Housing and Construction), pursuant to notice, moved - That, in accordance with the provisions of the Public Works Committee Act 1962, the following proposed work be referred to the Parliamentary Standing Committee on Public Works for consideration and report: Development of new utility helicopter facilities at RAAF Base, Townsville.

Mr West presented plans in connection with the proposed work.

Debate ensued.

Question - put and passed.

C-O-N-T-E-N-T-S

Paragraph

THE REFERENCE	1
THE COMMITTEE'S INVESTIGATION	4
BACKGROUND	
Location	9
Description	10
History	13
Facilities Occupied by No. 35 Squadron	15
Present Functions of RAAF Base, Townsville	16
THE NEED	20
Location at Amberley	21
Facilities Required	26
Facilities Available at RAAF Base, Townsville	27
Transfer of Battlefield Helicopters	33
Number of Helicopters	39
Committee's Conclusion	40
THE PROPOSAL	41
Options	42
Location	47
Design Concept	50
Flight Line Annexe	53
Hangar	54
Technical Support Facility	55
Headquarters Building	56
Simulator	57
Construction	58
Mechanical Services	63
Electrical Services	64
Fire Protection	65
Helicopter Apron and Taxiway Extensions	67
Fuel Tanker Parking Area	71
Security	72

	Paragraph
Trunk Engineering Services	73
Carparking	77
Later Changes to Proposal	78
Committee's Conclusion	79
Single Accommodation	80
Houses	81
Standard of Houses	84
Cost of New Houses	89
Method of Delivery	93
Location of Houses	95
Consultations	97
Committee's Consideration	98
Committee's Conclusion	102
FUTURE WORK	103
MUSEUM	107
HAWKER de HAVILLAND LTD	112
ENVIRONMENTAL FACTORS	118
Louisa Creek Drainage Scheme	129
Committee's Recommendation	131
Aircraft Noise	132
CONSULTATIONS	136
USE OF CONSULTANTS	139
COST AND TIMETABLE	140
Committee's Recommendation	144
RECOMMENDATIONS AND CONCLUSIONS	145
APPENDIX A - List of Witnesses	A-1
APPENDIX B - Illustrations	
Plan of RAAF Base, Townsville, and Environs	B-1
Locality Plan	B-2
Site Plan	B-3
Floor Plan	B-4
Sections	B-5

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

DEVELOPMENT OF NEW UTILITY HELICOPTER FACILITIES
AT RAAF BASE, TOWNSVILLE

R E P O R T

By resolution on 23 October 1986 the House of Representatives referred to the Parliamentary Standing Committee on Public Works for consideration and report the proposal for the development of new utility helicopter facilities at RAAF Base, Townsville.

The Committee is pleased to report as follows:

THE REFERENCE

1. The works proposed in this reference involve the construction at RAAF Base, Townsville, Queensland, of facilities for No. 9 Squadron which is to be re-equipped with Sikorsky 'Blackhawk' helicopters.

2. The project comprises:

- site preparation and the provision of trunk engineering services;
- extension of the taxiway and new helicopter apron;
- construction of a maintenance hangar, flight line annexe and technical support facility;
- construction of a headquarters building, ancillary building and carpark;

- relocation of a fuel tanker parking area;
- associated security measures; and
- provision of 15 new married quarters.

3. The estimated cost of the proposed works when referred to the Committee was \$20.7 million at October 1986 prices.

THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions and plans from the Department of Defence (Defence) and the Department of Housing and Construction (DHC), and took evidence from representatives of the two departments at a public hearing held at RAAF Base, Townsville, on 9-10 December 1986.

5. The Committee also received written submissions and took evidence from representatives of the following organisations:

- Townsville City Council;
- Wildlife Preservation Society of Queensland (Townsville Branch);
- North Queensland Conservation Council Inc.;
- Hawker de Havilland Ltd; and
- Townsville Airport Committee.

6. A list of witnesses who appeared at the public hearing is at Appendix A.

7. Prior to the public hearing the Committee inspected RAAF Base, Townsville and a representative sample of Army married quarters which will be made available for RAAF personnel.

8. The Committee's proceedings will be printed as Minutes of Evidence.

BACKGROUND

9. Location RAAF Base, Townsville, is a Defence-controlled airfield, comprising 750 hectares, used for military and civilian operations located in the suburb of Garbutt, approximately five kilometres west of the Townsville Central Business District.

10. Description The area occupied by the base comprises three functional areas:

- RAAF building area in the south-east corner, consisting of aircraft hangars, workshops and aprons, and residential and administrative accommodation;
- an area of 16 hectares to the north of the RAAF building area allocated to the Department of Aviation for domestic and international airport terminals and civil aviation support facilities; and
- the aircraft movement area, comprising runways and taxiways; the main runway is 2440 metres long and is suitable for international traffic - a secondary cross runway provides for light aircraft operations.

11. The site is bounded in the south by the Bruce Highway and industrial and residential areas, on the west by a future industrial development site and the Town Common, on the north by the Town Common and on the east by special purpose and residential land. (See Illustration B-1, Appendix B - a plan of RAAF Base, Townsville and adjacent areas.)

12. For the purposes of this report it is worth noting the location of the following features and facilities on the base:

- the eastern tarmac area and hangar;
- facilities occupied by No. 35 Squadron adjacent to the southern boundary; and
- Blakeys Crossing wetlands immediately to the west of the No. 35 Squadron facilities.

13. History In 1938 a Citizens Air Force Squadron was established on the aerodrome which was at the time owned and operated by the Townsville City Council. In 1940 ownership was transferred to the Commonwealth and construction of buildings and engineering services for the RAAF Base commenced. The following year Northern Area Headquarters was formed with the task of protecting sea lanes to the north. During the Second World War the aerodrome was used by the United States for the assembly of medium and heavy bomber aircraft.

14. Following the Second World War No. 10 General Reconnaissance Squadron was formed at Townsville in 1949 and was equipped with Lincoln aircraft. In 1953 the squadron was renamed No. 10 Maritime Reconnaissance Squadron and re-equipped with Neptune aircraft in 1962. In 1978 the Neptunes were phased out and the squadron, equipped with Orion aircraft, was relocated to RAAF Base, Edinburgh, S.A. In 1974, No. 35 Squadron was located at Townsville. This squadron, equipped with Iroquois helicopters and Caribou transport aircraft, occupies facilities which were reported on by the Committee in 1972, and intended to accommodate No. 9 Squadron. (Committee's Twenty-third Report of 1972, Parliamentary Paper No. 136/1972.)

15. Facilities Occupied by No. 35 Squadron These facilities are located adjacent to the southern boundary of the base, to the west of the main runway. Facilities provided for No. 9 Squadron, which were part of a wider redevelopment of the base (estimated

to cost \$8.0 million in 1972) included an apron for the parking, refuelling and routine servicing of aircraft, an access taxiway, a hangar with annexes for workshops and a squadron headquarters. The facilities were not occupied by No. 9 Squadron. The Committee sought a clarification of the reasons for the change. Defence stated that the proposal examined by the Committee in 1972 was for the development of facilities to accommodate No. 9 Squadron on its return from Vietnam in December 1971. The Townsville facilities were not ready for occupation and this led to No. 9 Squadron being located at Amberley although it was intended to relocate the squadron at Townsville to support the Army task force there. Interim arrangements were made to provide support to the Army by locating elements of No. 35 Squadron at Townsville in 1974.

16. Present Functions of RAAF Base, Townsville RAAF Base, Townsville, is the only permanent RAAF establishment in northern Queensland. Its primary functions are:

- to provide tactical air support to Army combat elements of the Operational Deployment Force (ODF) based at Lavarrack Barracks, Townsville;
- combat survival training;
- air traffic control; and
- air/sea search and rescue.

17. Supporting functions include:

- base services for local units and strike and tactical fighter force deployments;
- high-frequency strategic and tactical communications; and
- supervision, control and co-ordination of air weapons ranges in the area.

18. The present establishment of the base is 557 RAAF personnel and 32 civilian staff.

19. In addition to No. 35 Squadron the following RAAF units are based at Townsville:

- Headquarters;
- Base Squadron; and
- No. 27 (RAAF Active Reserve) Squadron.

THE NEED

20. The Committee's evaluation of the need for the works which are the subject of this reference involved an examination of the following factors:

- the need to relocate No. 9 Squadron from Amberley to Townsville;
- the adequacy of existing facilities at Townsville which could provide support for No. 9 Squadron; and
- the implications of the transfer of control of battlefield helicopters from the RAAF to the Army in the context of the facilities required.

21. Location at Amberley No. 9 Squadron, located at RAAF Base Amberley, currently operates UH-1H Iroquois helicopters. At Amberley the unit is dispersed over a wide area and occupies a variety of hangars and huts which have been recognised as unsatisfactory for some time.

22. The squadron will be re-equipped with 14 Sikorsky S70-A-9 'Blackhawk' helicopters and will initially operate from unsatisfactory facilities at Amberley. Deliveries of the Blackhawks will commence in October 1987. During the delivery period the helicopters will require operating level maintenance and, Defence advised, there will not be a requirement for high

degrees of advanced maintenance requiring special facilities as the helicopters will be new. Defence did emphasise, however, that operations from existing sub-standard facilities could only be sustained for a limited period. As the number of helicopters delivered to the squadron and as the squadron's operational capability both increase, fully operational permanent facilities will be required to enable higher levels of maintenance to be carried out. Facilities at Amberley are inadequate for this purpose.

23. Although located at RAAF Base, Amberley, one of the main roles of the squadron is to provide tactical air support for the Australian Defence Force (ADF) - especially the ODF.

24. The ODF is the operationally ready element of the Army and is prepared for rapid deployment in low level contingency situations. It is basically air portable in transport aircraft and helicopters. Its current deployment capabilities are to prescribed levels.

25. An examination of the long-term disposition of the utility helicopter force carried out by Defence concluded that No. 9 Squadron should be relocated from Amberley to Townsville in view of its close association with the ODF and to reduce non-effective transit flying time between the two bases. The change-over from Iroquois to Blackhawks is considered the most appropriate time during which the relocation can take place. The Minister for Defence announced the intended relocation on 22 August 1986.

26. Facilities Required To enable the re-equipped No. 9 Squadron to operate from RAAF Base, Townsville, Defence submitted that the following permanent facilities are required:

- operational facilities such as aircraft parking and movement, ground running and aircraft washdown;

- technical facilities for activities such as operating and intermediate maintenance, technical systems analysis, specialised workshop support and maintenance control;
- administration facilities for command and control, aircrew accommodation, tactics development and operational and navigation planning; and
- domestic facilities to cater for squadron personnel and their families.

27. Facilities Available at RAAF Base, Townsville Defence stated that apart from some stores, messing capacity and single accommodation there are no existing facilities at RAAF Base, Townsville, which are available for occupation by No. 9 Squadron.

28. The Committee endeavoured to ascertain if the facilities occupied by No. 35 Squadron could be adapted to provide facilities for No. 9 Squadron as well as the helicopters of No. 35 Squadron, with the Caribous being parked and maintained at the eastern tarmac area and in the adjacent hangar.

29. Defence advised that facilities currently available for No. 35 Squadron are barely adequate for their needs. An annexe and part of the floor area in the hangar adjacent to the eastern tarmac are being utilised for the spill-over of activities currently being generated by No. 35 Squadron.

30. Defence housing stock in Townsville comprises a combination of Commonwealth-State Housing Agreement (CSHA) and Defence-owned married quarters which are allocated to the Army and the RAAF. Currently the RAAF Base administers 298 married quarters. Of these, 254 are CSHA and 44 are owned by Defence. Defence advised within the overall total there is currently an imbalance in the

existing mix of houses compared with rank structure. The extent of the imbalance is as follows:

- an excess of 43 Group 1 houses;
- a requirement for 31 Group 2 houses; and
- a requirement for 12 Group 3 houses.

31. Defence advised that an additional 113 married quarters are required to house personnel associated with the relocation of No. 9 Squadron. This requirement could be met by transferring 42 Army houses to the RAAF, constructing 15 new houses for senior personnel to partially redress the imbalance in the mix of houses and providing the balance of 56 houses later.

32. Single accommodation for officers is available within existing facilities. Single accommodation for lower ranks is available and can be refurbished to meet the predicted increased demand. Four existing barrack blocks would need to be refurbished.

33. Transfer of Battlefield Helicopters On 20 November 1986 the Minister for Defence announced approval in principle to the transfer of battlefield helicopters from the RAAF to the Army. It is envisaged that the transfer will take place gradually over a period of five years. The announcement was made after the Committee received the reference and departmental submissions.

34. The Committee questioned Defence officials at length about the implications of the transfer - the need for the Blackhawks to be located at Townsville and the need for the facilities mentioned above.

35. Arising from the Minister's announcement Defence is now developing an implementation plan for the transfer. This plan is expected to be completed by April 1987. The RAAF will continue to manage the Blackhawk acquisition program and bring the

helicopters into service. Army will progressively provide increasing numbers of operational personnel to RAAF helicopter squadrons and towards the end of five years, as the numbers of Army personnel increases, the units will become Army units.

36. Defence emphasised facilities required for battlefield helicopters at RAAF Base, Townsville, will be needed and would be fully utilised regardless of the transfer.

37. In terms of the domestic accommodation requirement, Defence believe the married quarters should be regarded as collective Defence stock in the Townsville area and made available, as required, to members of the ADF. Any Army houses allocated to the RAAF could be readily re-allocated to the Army as the transfer of helicopters nears completion.

38. The need to upgrade single accommodation at RAAF Base, Townsville, will not be diminished by the helicopter transfer. There has been an ongoing program of upgrading single quarters accommodation on the base. Upgraded single room accommodation has already been provided for Base staff. The need to upgrade further accommodation blocks as a part of the on-going program remains. Upgraded accommodation would be needed by No. 9 Squadron initially and following the transfer, the upgraded accommodation will be used by elements of the RAAF deployed at Townsville.

39. Number of Helicopters The Committee questioned Defence about the number of helicopters which it is ultimately planned to station at Townsville. Defence stated there are currently 11 Iroquois helicopters in No. 35 Squadron. With the transfer of the Iroquois of No. 9 Squadron and the introduction of Blackhawks into operational service, the numbers will increase to a maximum of 17 Iroquois and 14 Blackhawks. At the turn of the decade the Iroquois will achieve their life-of-type but it is planned that further Blackhawks will enter service. Unless there is a

significant deterioration in strategic circumstances it is expected that the number of helicopters based at Townsville will remain at 31.

40. Committee's Conclusion New operational and support facilities for Blackhawk helicopters are required at RAAF Base, Townsville. Additional Group 2 and 3 houses are required to redress the imbalance between the mix of houses and rank structure required for additional personnel to be based at Townsville.

THE PROPOSAL

41. The proposal is to provide operational, administration and accommodation facilities for Blackhawk helicopters at RAAF Base, Townsville, comprising the following components:

- site preparation and the provision of trunk engineering services;
- a new helicopter apron and the extension of the existing taxiway;
- a new maintenance hangar with associated flight line annexe, technical support facility and flammable liquids store;
- a new headquarters building and carparks;
- relocation of the existing fuel tanker parking area;
- the provision of new security comprising a gatehouse, fence, lighting and intruder detection system; and
- the provision of 15 off-base married quarters.

42. Options Defence considered two practical options for locating facilities for the Blackhawk helicopters.

43. Option 1 is to construct new facilities adjacent to No. 35 Squadron and reserve existing buildings adjacent to the eastern tarmac area for deployments.

44. Option 2 is to upgrade existing buildings for battlefield helicopters and provide new facilities for deployments adjacent to No. 35 Squadron.

45. Option 1 is estimated to cost \$19.3 million and Option 2 is estimated by Defence at \$23.4 million.

46. Option 1 was selected as the more suitable for the following reasons:

- Option 2 is more expensive than Option 1;
- Option 2 would limit close co-ordination of helicopter operations involving group lifts of elements of the ODF - (under Option 1 the two units are adjacent to each other);
- Option 2 would complicate air traffic control due to the mix of fighter aircraft and helicopters in the No. 35 Squadron area - (this would not occur under Option 1);
- Option 2 would reduce flexibility resulting from the inter-operation of equipments between the two units;
- Option 2 would generate congestion for both domestic and military fixed wing aircraft at the southern end of the main runway;
- Option 2 would create a situation where helicopters produce a potential risk of foreign object damage to fixed wing aircraft.

47. Location The proposed location of helicopter support and administration facilities is adjacent to the complex occupied by No. 35 Squadron. This location is in accordance with the Provisional Master Plan for RAAF Base, Townsville. (See Illustration B-2, Appendix B - Locality Plan.)

48. Soil investigations have been carried out on the site to determine the nature of sub-surface conditions. DHC advised that the proposal includes provision for appropriate pavement designs and buildings founded on spread and strip footings appropriate to sub-surface conditions.

49. The following paragraphs describe the general design concept, functional planning and the various components of the proposed complex.

50. Design Concept DHC advised that alternative planning concepts for aircraft movement areas and building layouts were examined. The proposed apron and taxiway configurations (see Illustration B-3 - Site Plan) result from:

- aircraft clearance requirements;
- land availability;
- the need to separate rotary and fixed wing aircraft;
- integration with support facilities; and
- any future development of the No. 35 Squadron apron.

51. The configuration and siting of buildings (see Illustration B-4 - Floor Plans) was determined by:

- land availability;
- relationship to apron, in particular apron/taxiways;
- security requirements; and
- relationship to existing buildings.

52. The general building arrangement mirrors the existing No. 35 Squadron complex. The new complex will comprise four major building components and a helicopter apron and taxiway extensions.

53. Flight Line Annexe This building will house aircrew safety equipment, workshop, flight line office and crew rooms, airborne ancillary equipment store, technical publications office, maintenance co-ordination office and control section and a shelter for ground support equipment.

54. Hangar The maintenance hangar will be about 2,200 square metres in area to accommodate four Blackhawks undergoing maintenance.

55. Technical Support Facility This building will be adjacent to the hangar and will contain offices, stores and workshops for avionics, engines, hub/blade and rotor assemblies, sheet metal, tyre/wheel and brakes, hydraulic/pneumatic functions, fibreglass/plastics and armament as well as a ground support equipment section and secure deployment and fly-away kit store. A separate flammable liquids store will be provided.

56. Headquarters Building This will contain administration areas, pilot briefing room, operations and computer room, tactical development, map room and store, library, conference room and pilot and loadmaster crew rooms. (Floor Plans and Sections of the proposed new buildings are shown in Illustrations B-4 and B-5, Appendix B.)

57. Simulator The Committee questioned Defence about the non-inclusion of a simulator for the Blackhawks in this proposal, as a simulator is being provided for the RAN's Seahawk helicopters which will be based at HMAS Albatross, Nowra, N.S.W. (See Committee's Twelfth Report of 1986.) Defence advised there may be a requirement for a simulator later in the procurement of

follow-on Blackhawks. A simulator is required for the Seahawks as soon as they enter service to enable them to meet their role capability. The training of Seahawk aircrew requires the participation of other assets such as submarines and it is expensive to provide these assets for all facets of crew training. This will not be the case when the Blackhawks enter service although the Army has been tasked to examine the need for a Blackhawk simulator. If it is recommended that a simulator should be acquired, it would probably be located at Oakey, Queensland.

58. Construction The flight line annexe, hangar and technical support facility will be single-storey. Superstructures will be steel frame supported on pad footings. Floors will be reinforced concrete. Roofing will consist of prefinished profile metal sheet.

59. External walls will be masonry to window sill height and prefinished profile metal sheet above. Ceilings will be finished with acoustic sheet material. Windows will be screened for security, sun and debris protection.

60. The headquarters building will be two-storey load bearing masonry with suspended reinforced concrete first floor and steel frame roof construction.

61. All office areas and amenities will be in accordance with Service Scales and Standards of Accommodation.

62. The basis for the selection of internal and external materials and finishes is acoustic performance, durability, cyclonic debris resistance, cost effectiveness and the availability of materials.

63. Mechanical Services All office areas and those workshops requiring a controlled environment will be provided with ducted

air conditioning. Forced air ventilation systems will be provided to workshop areas where natural ventilation is impractical or insufficient. Compressed air and mechanical extraction systems will be provided in workshops in the hangar complex.

64. Electrical Services Illumination will be provided by fluorescent or high intensity fittings. Emergency exit and security lighting will be provided throughout. General purpose power will be provided to all areas including electrical equipment in workshops and on the hangar floor. Frequency convertors will be provided for the avionics loads in the hangar and technical services facility. Emergency power will be provided to the hangar complex and to operations and crew rooms in the headquarters building.

65. Fire Protection The hangar will contain fire points and a detection and foam suppression system. A sprinkler system will be provided to the adjoining annexe and technical support facility which will be fire isolated from the hangar by a two-hour rated fire wall. A separate flammable liquids store will be provided with flameproof lighting, external security light and manual call point.

66. The headquarters building will be provided with thermal and smoke detection systems, sounders, fire alarm panels, hydrants and extinguishers.

67. Helicopter Apron and Taxiway Extensions The helicopter apron will be designed to accommodate 14 Blackhawks. It will be flexible pavement similar in strength to the existing 35 Squadron apron consisting of 50mm bituminous concrete on 250mm crushed rock base on 450mm crushed rock sub-base. An allowance for alternative 200mm lean mix concrete partial sub-base has been made if construction occurs in the wet season.

68. Two aircraft maintenance pads will be included in the apron.

69. The existing taxiway B will be extended to connect the apron with the main runway.

70. The apron and taxiway will be designed for aircraft loadings up to C-130 'Hercules' at maximum all-up-weight at prescribed frequency of operations.

71. Fuel Tanker Parking Area Relocation of the existing fuel tanker parking area will involve the provision of rigid and flexible pavements similar in strength to the existing area. A security fence, security lighting, earthing and drainage will also be provided. The existing facility will be demolished upon completion of the new parking area.

72. Security An inner security perimeter will be provided which will encompass the new facilities and the existing No. 35 Squadron helicopter facilities. Access to the complex will be through a manned control point. Intruder detection systems will also be provided.

73. Trunk Engineering Services The truck engineering infrastructure will be extended and upgraded to meet the requirements of this proposal and known future master planning proposals.

74. High voltage power supply will be connected from the central emergency power house to a new substation to be located in the technical services facility. Emergency power requirements will be supplied from existing generating capacity.

75. Water supply, sewerage and stormwater drainage will be extended to meet development needs.

76. The existing perimeter road will be relocated and extended.

77. Carparking Parking for eight service vehicles will be provided within the inner security perimeter. Parking for personnel will be provided outside the security barrier.

78. Later Changes to Proposal The Committee questioned Defence regarding the implications of the planned transfer of battlefield helicopters from the RAAF to the Army on the facilities described above. The Committee sought an assurance from Defence that should approval be given for the proposal to proceed, there would be no changes to the design or the scope of the proposed work. The Committee was assured that the operational, administrative and technical facilities proposed for No. 9 Squadron will be fully utilised by the Army when it takes over battlefield helicopters. Defence also assured the Committee that there would be no changes between now and when tenders are called to the scope of the proposal. Defence did not foreshadow any work at Lavarack Barracks relating to battlefield helicopters.

79. Committee's Conclusion The design and location of new facilities at RAAF Base, Townsville, for No. 9 Squadron are satisfactory and will be fully utilised by the Army when it assumes control of battlefield helicopters.

80. Single Accommodation It is proposed to refurbish four existing domestic blocks at RAAF Base, Townsville at a total estimated cost of \$0.7 million. The cost of this work is not included in the total cost of the works in this reference. The refurbishment will be undertaken as part of the RAAF repairs and maintenance program. Work on two blocks (one for Senior NCOs and one for Other Ranks) was authorised in 1986/87 and the work on the remaining two blocks is proposed to be authorised in 1987/88. The work involves:

- structural upgrading to improve resistance to high winds;
- conversion of 10 existing two-man rooms to 13 single bedrooms;
- minor upgrading of ablution areas; and
- provision of acoustic treatment to sleeping quarters involving the installation of air conditioning to sealed areas.

81. Houses Defence has assessed a need for the RAAF to be provided with 113 additional houses in consequence of the relocation of No. 9 Squadron. This requirement would be partly met in the first instance by transferring 42 surplus Army houses to the RAAF. In order to partially rectify the imbalance between houses available and rank structures, it is proposed to construct 15 new houses for more senior ranks and to provide the balance of 56 houses later. These houses, not required until 1987/88, will be provided using one or a combination of alternative delivery methods including new construction, direct purchase, leasing, and/or transfer from Army.

82. The proposed mix of houses is as follows:

Group	3-bedroom	4-bedroom
2	1	2
3	11	1

83. The Committee questioned a number of aspects of proposed arrangements:

- the standard of the houses to be transferred from the Army;
- the apparent high cost of providing the 15 new houses;
- alternative delivery methods for new houses; and
- consultations with prospective tenants.

84. Standard of Houses Defence advised that 27 Army houses have already been transferred to the RAAF and that 19 of these are CSHA houses. It is envisaged that when the transfer is complete 60 per cent of them will not comply with current scales and standards. Defence did emphasise that the existing stock of married quarters in Townsville is being examined with the aim of developing a management plan which will identify properties which will be disposed of and those properties considered suitable for upgrading.

85. On the general question of improvements or upgrading of houses, Defence advised there are two general principles:

- prefabricated houses which meet 1972 scales and standards for area requirements but which are deficient in other ways - these houses may be upgraded if it is found to be cost-effective; and
- non-prefabricated houses which are deficient in 1972 scales and standards floor area requirements and which are considered suitable for upgrading to meet the standards.

86. An improvement program is underway on houses within the latter category at Townsville. The improvement program in the longer term aims to completely upgrade each house. However, with the limited funds available if implemented immediately this would result in a very slow impact. Local Service managers and wives had indicated to Defence management that rather than a complete upgrading, they would prefer to proceed with more selective upgrading at lower cost and would be prepared to tolerate deficiencies in sizes. Consequently a limited program involving a large number of houses in Townsville is now underway. In 1986/87 \$593,750 has been allocated for improvement work on 63 houses and

at present it is planned to provide in 1987/88 a further \$406,000 for improving another 45 houses. The scope of the improvements includes:

- concreting the under side of high-set houses and enclosing the under side area;
- exhaust fans in kitchens and bathrooms;
- ceiling fans;
- security fly screen doors; and
- minor improvements to kitchens and bathrooms.

87. Defence advised that there has been very little expenditure associated with the transfer of Army houses to the RAAF. The Defence-owned houses which have been, or will be transferred, will be included in the general improvement works where necessary.

88. Defence advised that it is planned to provide \$111,200 for the installation of ceiling insulation in CSHA houses in 1987/88.

89. Cost of New Houses The estimated cost of the 15 houses is \$1.4 million or about \$100,000 each, excluding the cost of land. The Committee suggested to Defence and DHC that the unit cost figure is somewhat high and sought an explanation. This view was also shared by representatives of Townsville City Council who advised that a 3-bedroom house in Townsville would cost between \$70,000 and \$80,000.

90. DHC responded that the houses to be provided will be quite significant in size (135 square metres), the blocks will need to be developed and landscaped, and they will be completely fitted out - with fittings, floor coverings, blinds and curtains, etc.

91. For these reasons, any direct comparisons between market prices for average-sized 3-bedroom houses and the houses proposed is largely invalid.

92. Within the context of relative costs the Committee was advised that it is considered generally unlikely that suitable established houses, which would meet scales and standards, could be purchased in Townsville. DOLGAS had previously undertaken extensive investigations of houses available in Townsville and more recently in Cairns. The investigations had confirmed marked differentiation between civilian and defence housing standards in North Queensland. Satisfaction of Defence requirements from existing housing stocks available on the open market cannot be presumed.

93. Method of Delivery The Committee questioned the proposed method of providing the houses, that is, DHC undertaking the design and supervising construction by a private contractor. DHC and Defence considered this method of delivery to be the most appropriate in this particular case. Defence advised of a pilot study recently carried out in which the costs and quality of providing similar houses using three different delivery methods were assessed. The three methods were:

- land/house package where builders constructed houses on their land;
- construction by NSW Housing Commission; and
- builders submitting plans to DHC and being supervised by the Department.

94. It was found that the land/house package cost marginally less but the quality of the finished product was inferior to that achieved using the other two methods. Conversely, the DHC supervised house cost more but was of a higher quality. The NSW Housing Commission produced a house comparable to DHC but it took longer to complete.

95. Location of Houses It was proposed initially that the houses would be constructed on Defence-owned land purchased in 1981/82 for P1/2 scale houses. At the public hearing Defence

advised that if the 15 houses proposed in this reference were constructed on these blocks over-capitalisation would result due to the characteristics of the blocks and adjacent residential development. Defence emphasised that any expenditure on new houses must recognise asset capitalisation. For this reason the new houses should be located on blocks where over-capitalisation is avoided. It is therefore proposed to acquire more suitable blocks which are available in the range of \$22,000 to \$25,000 each.

96. The Committee requested Defence to seek confirmation from DOLGAS of the potential for over-capitalising blocks acquired in 1981/82 by constructing the proposed 15 houses on them. DOLGAS advised that since the blocks were acquired there has been a downturn in the residential market and further development in that area has been of a very inferior nature thus devaluing those sites. The Committee understands that Defence will, nevertheless, retain ownership of those sites.

97. Consultations DHC provided drawings showing floor plans of the houses to be provided. These plans will be developed further and DHC will consult with representatives of the wives of RAAF personnel about 'liveability' issues such as the operation of fittings, location of power points and the swing of doors. It was pointed out that although the representatives may never occupy the houses, most of them will be familiar with service accommodation and based on their experience have definite views on items and features which may need to be adjusted.

98. Committee's Consideration The Committee is concerned about two aspects relating to housing in Townsville. The first relates to the limited program of upgrading existing houses which will cost about \$1.0 million during 1986/87 and 1987/88. Although funds are being spent to upgrade houses to partially comply with Scales and Standards, there will be no increase in rents to

provide some return on the investment. The Committee believes a return on investment in these circumstances is warranted.

99. Secondly, the Committee believes that the estimated cost of providing the 15 new houses is too high and is unconvinced that the houses could not be provided at a lower cost using other methods of delivery.

100. In view of its general concern about the cost of Defence housing the Committee has already requested Defence and DHC to brief it on a number of aspects of Defence housing. The question of delivery methods, relative costs, standards of finish and the role of the new Defence Housing Authority will be addressed in more detail by the Committee at that briefing. It is also planned to obtain evidence from other sources including the housing industry.

101. Rather than delay the whole project, the Committee believes that on the grounds of cost the housing component of this reference should be delayed pending the briefing on housing which will be held in conjunction with a proposed reference on Defence housing at Watsonia in Victoria. The Committee will then present a supplementary report on the Townsville houses at the earliest opportunity.

102. Committee's Conclusion Some recovery of the cost of partially upgrading existing Defence houses at Townsville should be carried out. Insufficient evidence has been presented to indicate that the 15 proposed houses could not be provided at less cost using other delivery methods. The Committee will present a supplementary report on this aspect following a briefing by Defence and DHC.

FUTURE WORK

103. Defence foreshadowed a number of future works for which land has been reserved in the provisional master plan. These works include:

- upgrading of the existing No. 35 Squadron maintenance and operational facilities;
- new facilities for ordnance preparation, storage and loading; and
- increasing the bulk fuel storage capacity to supplement the existing installation.

104. Subsequent to the public hearing the Committee became aware, through information provided by DHC on projects in the range \$2-6 million, that the facilities for ordnance preparation, storage and loading, have been included in the 1986/87 approved capital works program at a limit of cost of \$2.08 million at November 1986 prices, including an estimated expenditure in 1986/87 of \$50,000.

105. Defence should have informed the Committee at the public hearing that the project is an approved work for 1986/87. The Committee believes that consideration should have been given to including these works in the reference relating to the development of new utility helicopter facilities. In future where significant additional works are programmed to proceed concurrently with proposals referred to the Committee, they should be included in the reference.

106. The Townsville City Council suggested that the area designated for fuel storage can become isolated as a consequence of flooding. Defence advised that the majority of the designated land would be used as a buffer zone; the fuel installation would be relatively small and the question of access to it would be taken into account in the final engineering solution.

MUSEUM

107. The Townsville Airport Committee sought agreement in principle to the inclusion of a helicopter display centre and an expanded museum in the master plan as an element ancillary to the proposed facilities for No. 9 Squadron. The Airport Committee indicated that a detailed feasibility study for such a concept could be undertaken in association with the RAAF and other community interest groups if approval in principle is obtained. The Airport Committee believes that an enlarged museum and helicopter display centre could become a tourist attraction, focussing public interest on RAAF activities and provide a stimulus for community involvement in the preservation and presentation of the RAAF helicopter heritage.

108. Defence advised it would not wish to have construction of a helicopter display centre linked to this proposal. Defence believes there are a number of practical matters which would need to be addressed before any direct public involvement in providing or extending an on-base display centre could be contemplated. These relate to security, public access, funding, staffing and equity, to what is fundamentally an operational defence establishment.

109. Defence advised that at present there is no prescribed Defence policy on museums although the matter is being examined in certain areas of the Department.

110. The RAAF believes there should be only one Air Force Museum; any other museums or display centres should become annexes. The location of the Air Force museum is dependent on the outcome of deliberations concerning the location of a national aviation museum.

111. The Committee believes within this general framework there may be scope for the RAAF and the Townsville Airport Committee to

combine resources and provide additional, but controlled, public access to the existing display centre at RAAF Base, Townsville.

HAWKER de HAVILLAND LTD

112. Not a part of the proposal, but a factor strengthening the potential for private enterprise to undertake depot level maintenance on military helicopters located at Townsville are plans announced by Hawker de Havilland Ltd to establish a new aerospace maintenance facility on a site adjacent to the airport. Hawker de Havilland is already a major support contractor for helicopters operated by the ADF and international users. These support activities include depot level maintenance of airframes, engines, transmissions and systems components.

113. The new facilities to be established at Townsville will be capable of providing maintenance, repair and modification support to smaller and medium sized fixed-wing aircraft and helicopters. The facilities will be established in two phases:

- 3,000 square metres due for completion in June 1987;
- 1,500 square metres planned for completion late in 1988.

114. The cost of site works, facilities and equipment for helicopter support is \$2.25 million at December 1986 prices.

115. Hawker de Havilland advised the Committee that Townsville was selected as a location for the aerospace maintenance facility for two reasons; first, the growing ADF aviation component at Townsville and, secondly, the availability of an international airport and an international port of entry for an international workload.

116. The Hawker de Havilland proposal will complement rather than duplicate what is proposed by Defence. The company concentrates mainly on undertaking depot level maintenance which

normally takes place every three or four years. Operating and intermediate level maintenance are usually undertaken by Defence.

117. It should be emphasised that the company has been given no guarantees of workload by Defence. The workload will be achieved on a competitive basis.

ENVIRONMENTAL FACTORS

118. Defence prepared a Notice of Intention (NOI) which was forwarded to the Department of Arts, Heritage and Environment (DAHE) for clearance, and for comment to the Australian Heritage Commission, the North Queensland Conservation Council and the Wildlife Preservation Society of Queensland in July 1986. Responses to the NOI, received by Defence, focussed to a large extent on the impact of the proposed work on Blakeys Crossing wetlands.

119. Blakeys Crossing wetlands are located north of Ingham Road (Stuart Highway) and to the west of the No. 35 Squadron facilities. They comprise permanent and semi-permanent ponds fed from Louisa Creek and the airfield which are filled during flood periods and are maintained, except in dry periods, by the shallow water-table. The wetlands sustain diverse populations of bird life and have a significant social value because of their proximity to the city. Defence advised that the proposed works may require filling an area of the wetlands measuring 50 metres by 50 metres and suggested that this area represents a small percentage of the wetlands area.

120. The Australian Heritage Commission advised Defence that a nomination of the Townsville Common to the Register of the National Estate is being prepared and it is likely that the area nominated (or a large part of it) would be entered in the Register. The Commission identified two issues of concern:

- infill of the wetland area of Blakeys Crossing - the Commission considered that the proposed infill area is very small and is adjacent to the existing infilled area of the runway; the adverse effects of the infill are likely to be negligible; and

- effects on water quality in the wetland system - the Commission considered that the design of aprons and taxiways is intended to minimise the possibilities of pollution. To minimise possible sedimentation of the wetlands during the construction phase, the Commission recommended that earthworks be carried out during the dry season.

121. The response from the North Queensland Conservation Council, dated 25 August 1986, raised the following points:

- the possible fill area which would encompass one of the deeper water holes in the Blakeys Crossing area;
- possible minor alterations to hydrology caused by an increase in the risk of contaminants such as oil and fuel entering stormwater runoff;
- the danger of birdstrike;
- the location of fences within the wetlands causing environmental damage; and
- additional filling of the wetland would be viewed with concern.

122. The response from the Wildlife Preservation Society of Queensland, dated 3 September 1986, identified the following areas of concern:

- loss of any wetland areas, particularly the Blakeys Crossing area;
- the impact of increased hardstand areas on water levels at various times of the year;
- water quality;
- any programs of bird control because of the risk of bird strike; and
- future expansion.

123. Defence forwarded these responses to DAHE on 29 August and 2 September. On 12 September 1986 DAHE advised Defence that on the basis of an examination of all the information provided, it had been determined that the preparation of an Environmental Impact Statement (EIS) would not be required to achieve the object of the Environmental Protection (Impact of Proposals) Act 1974. The memorandum from DAHE noted the favourable results of consultations with the three organisations mentioned above and recommended that the following conditions be satisfied:

- implementation of all environmental protection measures outlined in the NOI;
- minimisation of filling or disturbance to Blakeys Crossing wetland during erection of the proposed new fence within the inundated area and consideration of adopting a fence line that avoids the inundated area;

- consideration of the need for preliminary earthworks to minimise sedimentation of Blakeys Crossing during construction and of the Australian Heritage Commission recommendation that earthworks should only be carried out in the dry season;
- regular checking of water quality control devices associated with hardstand area runoff and workshop drainage to ensure their effective operation (runoff control devices should be designed to cope with major rainfall events);
- quantification of the noise signature and operational noise levels of Blackhawk helicopters as soon as they enter service and early instigation of liaison with Townsville City Council concerning any necessary land use controls; and
- referral of any future proposal for expansion west into Blakeys Crossing wetland to the Department under the Environment Protection Administrative Procedures.

124. The Townsville Branch of the Wildlife Preservation Society of Queensland subsequently provided Defence with additional comments on the NOI. These comments canvassed such matters as:

- the effects of the proposal and helicopter operations on birdlife and the importance of Blakeys Crossing to the public in view of its accessibility;
- the lack of precise information, in terms of nature and extent, on the area that will be excised from the wetlands;

- the source of fill for the area of wetlands to be affected; and
- the nature of the pollution control measures to be installed to prevent the escape of materials to the wetlands.

125. Representatives of the North Queensland Conservation Council and the Wildlife Preservation Society of Queensland (Townsville Branch) gave evidence at the Committee's public hearing.

126. The North Queensland Conservation Society suggested in the light of plans for future development of RAAF Base, Townsville, it would now be appropriate for an assessment of the costs and benefits of the entire provisional master-plan and an assessment of the impact of proposed and future works to be undertaken. The submission from the Townsville Branch of the Wildlife Preservation Society of Queensland took the view that insufficient consideration had been given to the environmental impact of the proposed development, particularly as a component of a larger development foreshadowed in the master-plan. The submission asserted that DAHE had not properly discharged its responsibilities in relation to the proposal.

127. A number of matters need to be addressed here. First, the fact that Defence prepared an NOI and made copies of it available to public interest groups for comment. The Administrative Procedures under the Environment Protection (Impact of Proposals) Act 1974, do not require proponent departments to furnish copies of NOIs to public interest groups for comment. The fact that Defence considered it desirable to do so, demonstrates considerable sensitivity to environmental issues. Secondly, the nature of the NOI itself; the Committee believes it to have been adequate for the purposes for which it was intended, namely, background to the need for new helicopter facilities, a

description of the existing environment which focussed on areas of sensitivity such as Blakeys Crossing, and the measures which will be implemented to reduce the impact of the proposed work on them. The NOI and the responses to it identified areas of concern and Defence and DHC have undertaken to comply with the recommendations of DAHE. Thirdly, the wider issue of broadening the scope of impact assessment to include the provisional master-plan. Defence pointed out that the purpose of master-plans are to reserve land for possible future uses; they are not necessarily implementation plans and possible future uses could change. Furthermore, at the master-planning stage, in the absence of any precise information about structures or facilities to be located within designated areas, it is difficult if not impossible to assess their impact on the environment.

128. The evidence shows that the proposed works were cleared by DAHE on the basis that any future expansion into Blakeys Crossing should be referred to it in accordance with prescribed procedures. After examining all the evidence in relation to adherence to environmental clearance procedures for this proposal, the Committee believes that there is no basis for the assertion that DAHE, Defence or DHC had not acted in accordance with current statutory procedures and general consultative guidelines.

129. Louisa Creek Drainage Scheme Unrelated to the proposed works but of relevance to concerns expressed by environmental groups is a scheme which is under consideration by Townsville City Council for improving the hydrography of Louisa Creek to prevent flooding in upper and lower catchment areas. This scheme includes construction of a drainage channel which would extend from Ingham Road, through the RAAF Base in the vicinity of Blakeys Crossing, through the pasture reserve to a tributary of the Bohle River. The drain would be about 3,500 metres in length, with a bottom width of 21 metres. The Council estimates the total cost of the drainage scheme, which encompasses the Louisa Creek

catchment area, at \$30-40 million. The cost of the drain downstream from Ingham Road is estimated at \$2 million. The impact on the integrity of the wetlands of such a development would be far more extensive than the impact of the works proposed for No. 9 Squadron. In order to reduce the impact, the Council scheme envisages the construction of a levee embankment on the eastern side of the drain to separate the drain, which will remain dry for most of the year, from the wetlands.

130. Following the public hearing Defence advised that DOLGAS is continuing to negotiate with the Council about the route of the drain through Defence property. The Council proposal is acceptable to Defence subject to a number of conditions which include that the proposed levee embankment not be constructed. Defence believes the embankment would cause flooding of Defence land. The natural drainage from the Defence land is from the eastern to the western side of Louisa Creek. An embankment may therefore cause a build-up of run-off causing excessive flooding in the vicinity of facilities proposed for No. 9 Squadron.

131. Committee's Recommendation Defence should consult further with the Townsville City Council, the Wildlife Preservation Society of Queensland and the North Queensland Conservation Council to determine acceptable designs for that portion of the proposed Louisa Creek Drainage Scheme which passes through Defence property.

132. Aircraft Noise Areas subjected to noise from aircraft are aligned along the main runway and noise levels are due mainly to jet operations which affect the northern beach and western suburbs of Townsville. Present and future helicopter operations are to the south-west of the main runway.

133. The Committee was advised that the RAAF does receive complaints about aircraft noise. These complaints are usually associated with deployments to Townsville of elements of the

Tactical Fighter Force. Noise reduction measures have been implemented to the extent that is possible and as a result the number of complaints has been reduced significantly during the past twelve months.

134. The NOI stated that the noise signature of Blackhawk helicopters is not known. Even using a most extreme illustration of doubling the noise signatures of Iroquois helicopters at forecast levels of activity, the overall effect on existing Australian Noise Exposure Forecast (ANEF) contours is considered by Defence to be negligible. Changes will occur away from existing built up areas of Townsville. DAHE recommended that Defence quantify the noise signatures and operational noise levels of the Blackhawks as soon as they enter service and instigate early liaison with Townsville City Council concerning necessary land use controls. Defence have indicated that this will be done.

135. Council officials stated at the public hearing that the RAAF Base is surrounded in the main by land held in public ownership. Private land in the suburb of Garbutt, which is adjacent to the base, is zoned and used for residential purposes. Although zoned for low rise development, the Council does not expect more intensive use of the suburb. An area to the west of the base is currently zoned 'future urban'. However, the Council advised that it is more likely to be developed in future for industrial purposes.

CONSULTATIONS

136. The Committee was advised that Defence and DHC carried out extensive consultations with Commonwealth Departments, and State and local government authorities. As well, local public interest organisations were apprised of the proposal.

137. The following organisations were consulted by DHC in the development of the proposal:

- Department of Aviation;
- DOLGAS;
- Telecom Australia;
- North Queensland Electricity Board; and
- James Cook University, Townsville.

138. Townsville City Council indicated strong support for the proposal and welcomes the increase in the service population to the city.

USE OF CONSULTANTS

139. DHC advised that their resources were supplemented by consultants specialising in the fields of master planning and site investigation. A substantial proportion of the design work, which has been carried out by DHC, will be documented by private consultants.

COST AND TIMETABLE

140. The limit of cost for the proposed works is \$20.7 million at October 1986 prices, made up as follows:

	\$m
On-base helicopter facilities	19.3
Initial accommodation requirements (15 houses)	<u>1.4</u>
	<u><u>20.7</u></u>

141. The Committee has recommended construction of on-base helicopter facilities and deferment of construction of the 15 houses pending further examination.

142. The estimated cost of the works recommended in this report is \$19.3 million.

143. Subject to Parliamentary approval it is proposed to commence construction in May 1987 with completion of the helicopter facilities by August 1988 to enable the RAAF to achieve operational readiness by December 1988.

144. Committee's Recommendation The Committee recommends construction of the on-base helicopter facilities.

RECOMMENDATIONS AND CONCLUSIONS

145. The recommendations and conclusions of the Committee and the paragraph in the report to which each refers are set out below:

	Paragraph
1. New operational and support facilities for Blackhawk helicopters are required at RAAF Base, Townsville.	40
2. Additional Group 2 and 3 houses are required to redress the imbalance between the mix of houses and rank structure required for additional personnel to be based at Townsville.	40
3. The design and location of new facilities at RAAF Base, Townsville, for No. 9 Squadron are satisfactory and will be fully utilised by the Army when it assumes control of battlefield helicopters.	79
4. Some recovery of the cost of partially upgrading existing houses at Townsville should be carried out.	102
5. Insufficient evidence has been presented to indicate that the 15 proposed houses could not be provided at less cost using other delivery methods. The Committee will present a supplementary report on this aspect following a briefing by Defence and DHC.	102

(38)

	Paragraph
6. Defence should consult further with the Townsville City Council, the Wildlife Preservation Society of Queensland and the North Queensland Conservation Council to determine acceptable designs for that portion of the proposed Louisa Creek Drainage Scheme which passes through Defence property.	131
7. The limit of cost for the development is \$20.7 million at October 1986 prices.	140
8. The estimated cost of the works recommended in this report is \$19.3 million.	142
9. The Committee recommends construction of the on-base helicopter facilities.	144

D.J. Foreman

(D.J. FOREMAN)
Chairman

Parliamentary Standing Committee
on Public Works
Parliament House
CANBERRA

26 February 1987

(39)

APPENDIX A

LIST OF WITNESSES

**Betts, Mr H.W., Senior Engineer, Townsville City Council,
Corner Stokes and Walker Streets, Townsville, Qld**

**Cassells, Mr M.J., Director-General Defence Housing,
Department of Defence, Russell Offices, Canberra, A.C.T.**

**Cicikszta, Wing Commander Z., Works Plan - A, Department of
Defence, Russell Offices, Canberra, A.C.T.**

**Claridge, Mr G.F., Publicity Officer, Wildlife Preservation
Society of Queensland, Townsville Branch, G.P.O. Box 1249,
Townsville, Qld**

**Dance, Mr P.A.G., Town Planner, Townsville City Council,
Corner Stokes and Walker Streets, Townsville, Qld**

**Fisher, Group Captain L.B., Officer Commanding, RAAF Base
Townsville, Ingham Road, Garbutt, Townsville, Qld**

**Gurevitch, Air Commodore R.N., Director-General Facilities -
Air Force, Department of Defence, Russell Offices,
Canberra, A.C.T.**

**Jacka, Mr A.R., Acting Associate Director (Projects),
Department of Housing and Construction, Queensland Region,
313 Adelaide Street, Brisbane, Qld**

**Lever, Mr I.G., Acting Project Manager (Defence), Department of
Housing and Construction, Queensland Region, 313 Adelaide
Street, Brisbane, Qld**

**McDougall, Commodore I., Director-General Joint Operations and
Plans, Department of Defence, Russell Offices, Canberra,
A.C.T.**

**Mooney, A.J., Deputy Mayor, Townsville City Council,
Corner Stokes and Walker Streets, Townsville, Qld**

**O'Dwyer, Mr J.J., Adviser, Townsville Airport Committee,
Portions 8-9, Parish of Woodstock, Coach Road, Mount
Elliott, Qld**

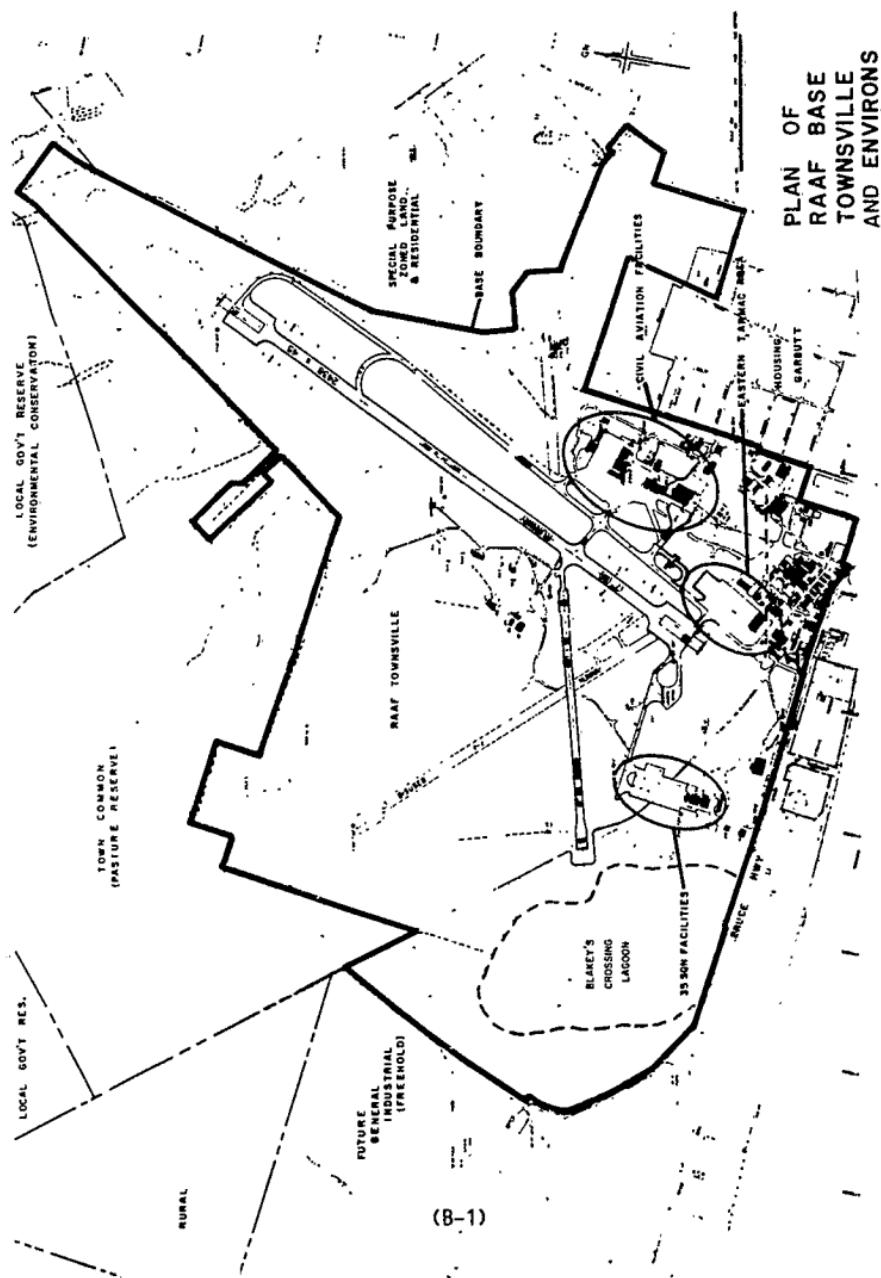
**Rowe, Mr J.W., Divisional Manager, Airframe Production and
Support, Hawker de Havilland Ltd, P.O. Box 30, Bankstown,
N.S.W.**

**Shannon, Ms M.J., Co-ordinator, North Queensland Conservation
Council, P.O. Box 364, Townsville, Qld**

**Smith, Mr P.A., Commercial Director, Hawker de Havilland Ltd,
P.O. Box 30, Bankstown, N.S.W.**

**Stanton, Mr B.J., City Engineer, Townsville City Council,
Corner Stokes and Walker Streets, Townsville, Qld**

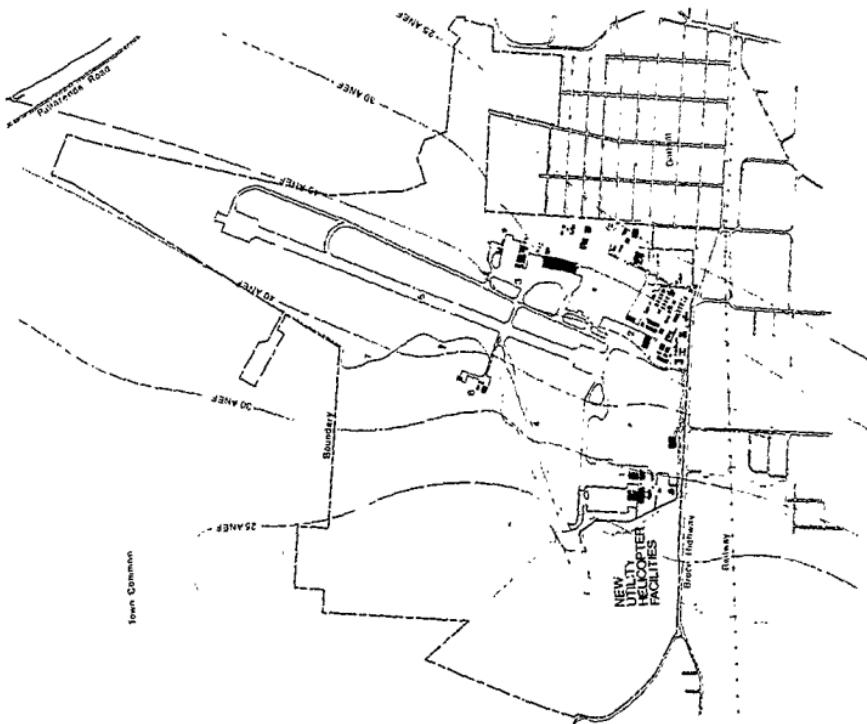
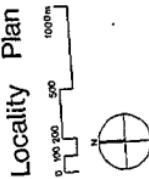
**Williams, Mr M.B., Chief Architect (Defence), Department of
Housing and Construction, 470 Northbourne Avenue, Dickson,
A.C.T.**



Legend

- Existing Facilities
- Operating Airfield
- Old Airfield
- 07/25 Runway
- 07/10 Runway
- Control Tower
- Existing Pavement Road

Town Community

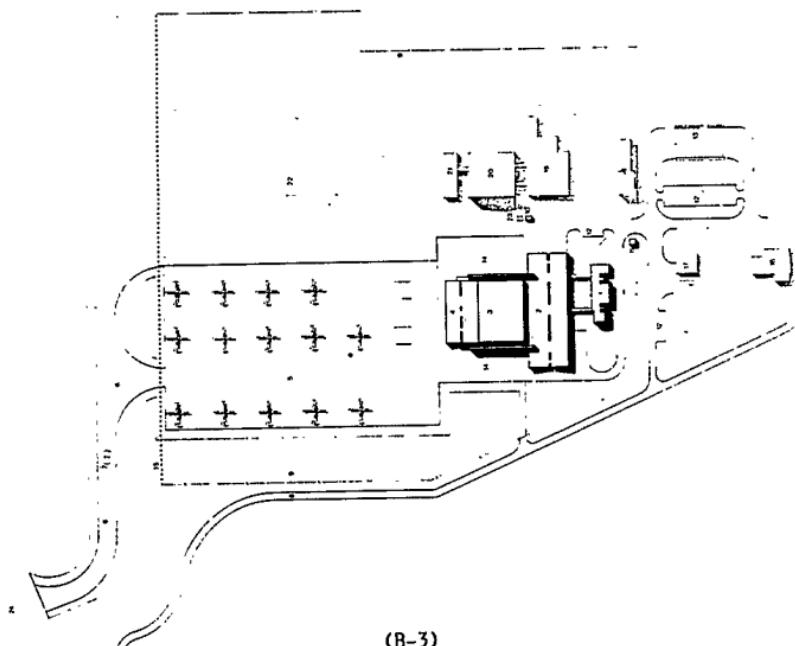
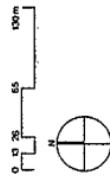


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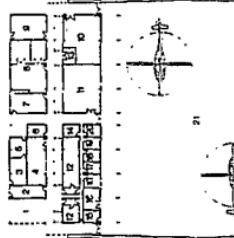
Legend

1	Headquarters
2	Technical Support Facility
3	Flight Line Areas
4	Aircraft Apron
5	Perimeter Road
6	Helipad
7	Security Service Building
8	Storage Building
9	Guard Building
10	Flammable Storage Building
11	Relocated Fuel Tank
12	Crash Pad
13	Relocated Fuel Tank
14	Storage Building
15	Existing Apron
16	Existing Apron
17	Existing Apron
18	Existing Apron
19	Existing 3550N Headquarters
20	Existing Technical Support Building
21	Existing Flight Line Areas
22	Existing Apron
23	Existing Apron
24	Existing 07/08 Runway

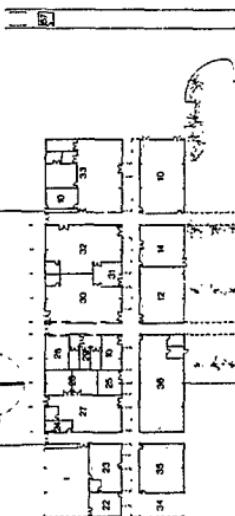
Site Plan



(B-3)



Flight Line Annex



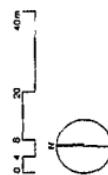
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Ground Rules



Headquarters First Floor



Floor Plan

16

Int. Library
Conference
Chairwoman
Editor
Secretary Room and Store
F S O
B F I Cmd
F I Inst
A F I Cmd
G L O
W O Loadman
S and Computer Bu.
Printers and Map Store
Fact Dev
Engineering Projects
Rooftop
Innumerable Ldg. Store.

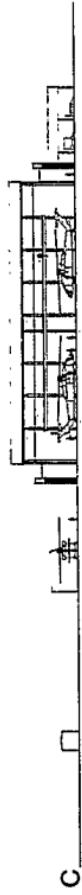


Typical

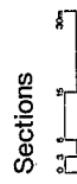


Headquarters

(B-5)



Hangar



Sections